This listing of claims will replace all prior versions and listings of claims in this application:

Listing of Claims

1. (Previously presented) A method for optically examining vessel walls of a blood vessel with a probe through intervening fluid, the method comprising:

inserting the probe into the blood vessel;

generating optical signals with the probe and directing the optical signals to the vessel walls;

receiving optical signals from the vessel walls through the intervening fluid at the probe;

analyzing the received optical signals to perform a proximity analysis to determine whether the probe is close enough to the vessel walls to enable assessment of the vessel walls by comparison of the received optical signals to a reference relating to a known characteristic of said intervening fluid; and

using the received optical signals to assess the vessel walls using spectral analysis of the optical signals when the probe is determined to be close enough to the vessels walls from the proximity analysis to enable the assessment of the vessel walls by the spectral analysis.

2. (Cancelled)

3. (Previously presented) A method as claimed in claim 1, wherein the step of analyzing the optical signals for the proximity analysis comprises determining an amplitude of the optical signals.

4. (Currently amended) A method as claimed in claim 3, wherein the step <u>of</u> analyzing the optical signals to determine whether the probe is close to the vessel walls for the proximity analysis comprises comparing the amplitude of the received optical signals to a threshold and the step of using the received optical

signals to assess the vessel walls for the spectral analysis is performed if the amplitude of the received optical signals is within the requirements of the threshold.

5. (Previously presented) A method as claimed in claim 1, wherein the step of using the received optical signals to assess the vessel walls for the spectral analysis comprises assessing the vessel walls in response to the spectral response of the vessel walls.

6. (Original) A method as claimed in claim 1, wherein an operator determines whether to use the received optical signals to assess the vessel walls based on a result of the step of analyzing the optical signals.

7. (Previously presented) A method as claimed in claim 1, wherein the step of analyzing the optical signals for the proximity analysis comprises comparing the optical signals to a spectral response of the intervening fluid and the step of using the received optical signals to assess the vessel walls for the spectral analysis is performed if the optical signals are sufficiently different from the spectral response of the intervening fluid.

8. (Original) A method as claimed in claim 7, wherein the intervening fluid is blood and the method further comprises acquiring the spectral response of the blood by extracting a sample of the patient blood and measuring the spectral response of the blood.

9. (Previously presented) A method as claimed in claim 1, wherein the step of analyzing the optical signals for the proximity analysis comprises analyzing a spectral response of the optical signals based on spectral features of the intervening fluid.

10. (Previously presented) A method as claimed in claim 9, wherein the intervening fluid is blood and the method further comprises comparing the

spectral response of the optical signals to known spectral features of blood for the proximity analysis.

11. (Original) A method as claimed in claim 9, wherein the step of analyzing the optical signals comprises performing an algebraic analysis of the spectral response.

12. (Original) A method as claimed in claim 11, wherein the algebraic analysis comprises a ratiometric comparison of the spectral response at multiple wavelengths.

13. (Original) A method as claimed in claim 11, wherein the algebraic analysis comprises analyzing a difference in the spectral response at multiple wavelengths.

14. (Previously presented) A method as claimed in claim 1, wherein the step of analyzing the optical signals for the proximity analysis comprises comparing the spectrum of the optical signals to the spectral response of the intervening fluid.

15. (Previously presented) A method as claimed in claim 1, wherein the step of analyzing the optical signals to determine whether the probe is close enough to the vessel walls to enable assessment of the vessel walls for the proximity analysis comprises analyzing the optical signals using a chemometric model.

16. (Original) A method as claimed in claim 15, wherein the chemometric model is built from spectral responses of blood samples.

17. (Original) A method as claimed in claim 15, wherein the chemometric model is built from spectral responses of blood samples from a population of patients.

18. (Original) A method as claimed in claim 15, wherein the chemometric model is built from spectral responses of blood samples from a population of patients and augmented by a current patient blood spectrum or spectra.

19. (Original) A method as claimed in claim 1, wherein the step of receiving the optical signals comprises detecting the optical signals at multiple times during multiple cardiac cycles of the patient.

20. (Original) A method as claimed in claim 1, wherein the step of receiving the optical signals comprises detecting the optical signals at multiple times during a single cardiac cycle of the patient.

21. (Original) A method as claimed in claim 1, wherein the step of using the received optical signals to assess the vessel walls comprises averaging spectral responses from multiple points in time.

22. (Previously presented) A method as claimed in claim 21, wherein the step of using the received optical signals to assess the vessel walls for the spectral analysis further comprises disregarding spectral responses that resemble a spectral response of the intervening fluid.

23. (Previously presented) A method as claimed in claim 1, wherein the step of using the received optical signals to assess the vessel walls for the spectral analysis comprises averaging spectral responses from multiple times during a single or multiple cardiac cycles, if the spectral responses were collected when the probe was close enough to the vessel walls to enable assessment of the vessel walls.

24. (Previously presented) A method as claimed in claim 1, wherein the step of using the received optical signals to assess the vessel walls for the spectral analysis comprises averaging spectral responses from multiple points in time if the spectral responses were collected when the probe was close enough to the vessel walls to enable assessment of the vessel walls.

25. (Original) A method as claimed in claim 1, further comprising inducing movement between the probe and the vessel walls.

26. (Previously presented) A method for controlling diagnostic or therapeutic applications, the method comprising:

inserting a probe into a blood vessel;

generating optical signals with the probe and directing the optical signals to the vessel walls;

receiving the optical signals from the vessel walls through intervening fluid at the probe;

analyzing the received optical signals to perform a proximity analysis to determine whether the optical signals are indicative of the vessel walls and/or the intervening fluid by comparison of the received optical signals to a reference relating to a known characteristic of said intervening fluid;

using the received optical signals to assess the vessel walls using spectral analysis of the optical signals when the probe is determined to be close enough to the vessels walls from the proximity analysis to enable the assessment of the vessel walls by the spectral analysis; and

initiating diagnosis or treatment of the vessel walls in response to the step of analyzing the optical signals if the probe is determined to be close enough to the vessels walls to enable the diagnosis or treatment.

27. (Original) A method as claimed in claim 26, wherein in the step of analyzing the optical signals, the determination of whether the optical signals are indicative of the vessel walls and/or the intervening fluid is used to determine a proximity between the probe and the vessel walls.

28. (Cancelled)

29. (Cancelled)

30. (Previously presented) A method as claimed in claim 26, wherein the step analyzing the optical signals for the proximity analysis comprises determining an amplitude of the optical signals.

31. (Previously presented) A method as claimed in claim 26, wherein the step analyzing the optical signals for the proximity analysis comprises measuring an amplitude of the received optical signals and the step of initiating treatment is performed if the amplitude of the received optical signals is within the region designated as tissue signal with respect to a preset amplitude threshold.

32. (Cancelled)

33. (Original) A method as claimed in claim 26, wherein an operator determines whether to use the received optical signals to assess the vessel walls based on a result of the step of analyzing the optical signals.

34. (Previously presented) A method as claimed in claim 26, wherein the step of analyzing the optical signals for the proximity analysis comprises comparing the optical signals to a spectral response of the intervening fluid and the step of initiating treatment is performed if the optical signals are sufficiently different from the spectral response of the intervening fluid.

35. (Original) A method as claimed in claim 34, wherein the intervening fluid is blood and the method further comprises acquiring the spectral response of the blood by extracting a sample of the patient blood and measuring the spectral response of the blood.

36. (Previously presented) A method as claimed in claim 34, wherein the intervening fluid is blood and the method further comprises acquiring the spectral response of the blood by placing the catheter or probe within the patient in an area that has a large distance between the probe and the vessel wall.

37. (Original) A method as claimed in claim 26, wherein the step of analyzing the optical signals comprises analyzing a spectral response of the optical signals based on spectral features of the intervening fluid.

38. (Original) A method as claimed in claim 37, wherein the intervening fluid is blood and the method further comprises comparing the spectral response of the optical signals to known spectral features of blood.

39. (Original) A method as claimed in claim 37, wherein the step of analyzing the optical signals comprises performing an algebraic analysis of the spectral response.

40. (Original) A method as claimed in claim 39, wherein the algebraic analysis comprises a ratiometric comparison of the spectral response at multiple wavelengths.

41. (Original) A method as claimed in claim 39, wherein the algebraic analysis comprises analyzing a difference in the spectral response at multiple wavelengths.

42. (Previously presented) A method as claimed in claim 26, wherein the step of analyzing the optical signals for the proximity analysis comprises comparing the spectrum of the optical signals to the spectral response of the intervening fluid.

43. (Previously presented) A method as claimed in claim 26, wherein the step of analyzing the optical signals for the proximity analysis comprises analyzing the optical signals using a chemometric model.

44. (Original) A method as claimed in claim 43, wherein the chemometric model is built from spectral responses of blood samples.

45. (Original) A method as claimed in claim 43, wherein the chemometric model is built from spectral responses of blood samples from a population of patients.

46. (Original) A method as claimed in claim 43, wherein the chemometric model is built from spectral responses of blood samples from a population of patients augmented by a current patient blood spectrum or spectra.

47. (Original) A method as claimed in claim 26, wherein the step of receiving the optical signals comprises detecting the optical signals at multiple times during a single cardiac cycle of the patient.

48. (Previously presented) A method as claimed in claim 26, wherein the step of assessing the vessel walls using the spectral analysis comprises averaging spectral responses from multiple points in time.

49. (Previously presented) A method as claimed in claim 48, wherein the step of assessing the vessel walls using the spectral analysis comprises disregarding spectral responses that resemble a spectral response of the intervening fluid.

50. (Previously presented) A method as claimed in claim 26, wherein the step of assessing the vessel walls using the spectral analysis comprises averaging spectral responses from multiple points in time if the spectral responses were collected when the probe was close enough to the vessel walls to enable assessment of the vessel walls.

51. (Previously presented) A method as claimed in claim 26, wherein the step of assessing the vessel walls using the spectral analysis comprises averaging spectral responses from multiple times during a single cardiac cycle or multiple cardiac cycles if the spectral responses were collected when the probe was close enough to the vessel walls to enable assessment of the vessel walls.

52. (Original) A method as claimed in claim 26, further comprising inducing movement between the probe and the vessel walls.

Claims 53-58. (Cancelled)

59. (Previously presented) A method for optically examining vessel walls of a blood vessel with a probe through intervening fluid, the method comprising:

inserting the probe into the blood vessel

generating optical signals with the probe and directing the optical signals to the vessel walls;

receiving optical signals from the vessel walls through the intervening fluid at the probe;

analyzing the received optical signals indicative of a spectral response of the vessel walls to determine proximity information concerning a proximity between the probe and the vessel walls by comparison of the received optical signals to a reference relating to a known characteristic of said intervening fluid; and

using the received optical signals to assess the vessel walls when the probe is determined to have a desired proximity to the vessels walls using spectral analysis.

60. (Original) A method as claimed in claim 59, wherein the proximity information is determined from a spectrum of the optical signals.

61. (Previously presented) A method for optically examining blood vessel walls with a probe through intervening fluid, the method comprising:

inserting the probe into the blood vessel;

generating optical signals with the probe and directing the optical signals to the vessel walls;

inducing movement between the probe and the vessel walls;

receiving optical signals from the vessel walls with the probe;

determining whether the probe is close enough to the vessel walls to enable assessment of the vessel walls by comparison of the received optical signals to a reference relating to a known characteristic of said intervening fluid; and

using the received optical signals to assess the vessel walls when the probe is determined to be close enough to the vessels walls using spectral analysis.

62. (Original) A method as claimed in claim 61, wherein the step of inducing movement between the probe and the vessels walls comprises configuring to the probe to interact with movement in an intervening fluid between the probe and the vessel walls.

63. (Original) A method as claimed in claim 61, wherein the step of determining whether the probe is close enough to the vessel walls comprises analyzing the optical signals.

64. (Original) A method as claimed in claim 61, wherein the step of analyzing the optical signals comprises spectrally analyzing the optical signals.

65. (Previously presented) A system for examining blood vessel walls, the system comprising:

a probe configured to be inserted into the blood vessel for optically examining blood vessel walls by emitting optical signals and receiving the optical signals from the vessel walls through intervening fluid;

an optical source for generating the optical signals;

a detector system for detecting the received optical signals from the vessel walls; and

a controller for controlling the optical source and monitoring the response of the detector system to determine a spectral content of the optical signals from the vessel walls, the controller comparing the spectral content of the optical signals to a spectral response of the intervening fluid to perform a proximity analysis to determine whether the probe is close enough to the vessel walls to enable assessment of the vessel walls, the controller using the received optical signals to assess the vessel walls when the probe is determined to be close enough to the vessels walls to enable the assessment of the vessel walls using spectral analysis of the vessel walls.

66. (Previously presented) A system as claimed in claim 65, wherein the controller uses the received optical signals to assess the vessel walls if the spectral

content of the optical signals are sufficiently different from the spectral response of the intervening fluid.

67. (Previously presented) A system as claimed in claim 66, wherein the intervening fluid is blood and the controller acquires the spectral response of the blood by measuring the spectral response of the blood.

68. (Previously presented) A system as claimed in claim 66, wherein the controller analyzes the optical signals to determine whether the probe is close enough in the proximity analysis to the vessel walls to enable assessment of the vessel walls using a chemometric model.

69. (Previously presented) A system as claimed in claim 68, wherein the chemometric model is built from spectral responses of blood samples.

70. (Previously presented) A system as claimed in claim 68, wherein the chemometric model is built from spectral responses of blood samples from a population of patients.

71. (Previously presented) A system as claimed in claim 68, wherein the chemometric model is built from spectral responses of blood samples from a population of patients and augmented by a current patient blood spectrum or spectra.

72. (Previously presented) A system as claimed in claim 68, wherein the controller averages spectral responses from multiple times during a single or multiple cardiac cycles, if the controller determines that the optical signals were detected when the probe was close enough to the vessel walls to enable assessment of the vessel walls for the spectral analysis.